

## REMARKS

Claims 1-18 are pending in the application, with claims 8-11 being withdrawn from consideration. Claims 1-7 and 12-18 are currently under examination.

The undersigned would like to thank the Examiner for the courtesy of a telephone interview on April 20, 2006, and a follow-up call on April 25, 2006. During the interview, claims 1, 12 , and 15-18 were discussed. In particular, a potential amendment to claims 1 and 12 was discussed, the proposed amendment clarifying that the cup serves as a pole piece for the magnet therein. Proposed amendments to claims 15-18 to overcome the 35 U.S.C. 112 rejections were also discussed. In addition, a nonstatutory obviousness-type double patenting rejection of claims 1 and 12 as being unpatentable over the commonly owned parent case, U.S. Patent 6,705,794 was discussed. In response, a terminal disclaimer is being concurrently submitted.

### The Amendments to the Claims

Claims 1 and 12 have been amended to clarify that the cup serves as a pole piece for the magnet therein. This amendment is supported at page 5, third paragraph.

Claim 12 has also been amended to specify that the magnet is selected from the group consisting of neodymium magnets and samarium cobalt magnets, and arnico magnets. This amendment is supported at page 5, lines 17-22 (third paragraph).

To further clarify what the Applicants regard as their invention, claims 15-18 have been amended to delete "about" from the last line of each claim.

### The 35 U.S.C. §112 Rejections

Claims 15-18 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In particular, the Office Action states that "the recitation in lines 1 and 2 of each of these claims, of 'at least about' renders the claims indefinite since 'at least' sets a minimum standard whereas 'about' blurs this minimum standard. The rejection is believed obviated by the amendment of claims 15-18. Reconsideration and withdrawal of the rejection is respectfully requested.

### The 35 U.S.C. §103 Rejections

Claims 1, 2, and 12-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over either of Vigne (U.S. Patent No. 5,727,727), Gabrielli (U.S. Patent No. 4,609,325) or Budreck (U.S. Patent 2,975,497) each taken alone.

Amended claims 1 and 12 contain the limitation that magnetic assembly is a cup magnetic assembly comprising a cup, said cup having at least one magnet therein and serving as a pole piece for said magnet. As is known in the art., a "pole piece" may be defined as "a piece of ferromagnetic material at the end of an electromagnet or permanent magnet, whose shape controls the magnetic flux distribution" (Academic Press Dictionary of Science and Technology, ed. Christopher Morris, Academic Press, San Diego, 1992, p1686) A copy of this definition is enclosed as Exhibit A. Claim 1 further contains the limitation that the attracted material presents a planar oval face. Amended claim 12 further contains the limitation that the magnet is selected from the group consisting of neodymium magnets, samarium cobalt magnets, and arnico magnets.

The Office Action states that Vigne (Figs. 2, 4, and 6) discloses a "removable piece" (removable lower leg 4) which provides a cup-shaped receptacle for holding a magnet 14 in place, and a fixed manikin part (upper leg 2, Figs. 1) with a flat surfaced magnet 20 to which the removable piece (lower leg 4) with magnet 14 is positioned for mating. As described at column 4, lines 19-27, Vigne's magnetic assembly 20 has a ferrite block magnet 22, and two bright

mild steel pole pieces 24, 26. In Fig. 9, these pole pieces are shown to be rectangular, rather than in the form of a cup. Any "cup-shaped receptacle" disclosed in the Vigne patent is not described as a pole piece and in fact may be made of non-magnetic material. In addition, Fig. 7 shows counterplate 14 to be rectangular, rather than oval. Since the Vigne reference does not teach or suggest all the limitations of claims 1 and 12, no *prima facie* case of obviousness has been made out. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 12 over the Vigne reference.

The Office Action states that Gabrielli discloses a removable piece 12 with cup 8 having a permanent magnet 10 located therein which mates with a cooperating magnet 5 on robot arm 1. At column 2, Gabrielli teaches a robot wrist having an arm 1 with magnetic disk 5 magnetized in the direction of the axis of the arm. End piece 8 has a recess 9 which receives axially magnetized disk 10. Disks 5 and 10 are held separated from each other by metal balls 13.

Gabrielli fails to teach that end piece 8 is capable of serving as a pole piece. In addition, the Gabrielli reference fails to teach or suggest mating between a magnetic assembly and an attracted material presenting a planar oval face, since both magnet 10 and magnet 5 appear to mate with the balls 13 separating the magnets. Gabrielli teaches that the balls are necessary to allow "small movements of end piece 8 parallel to itself with respect to arm 1." Thus Gabrielli teaches away from the claimed invention of claim 1 which requires an attracted material with a planar oval face to mate with the magnetic assembly. It is well settled in the law that a reference that teaches away from a claimed invention cannot be used in an obviousness rejection. Gabrielli also fails to teach particular magnet compositions. In view of all the foregoing, the Gabrielli reference does not teach or suggest all the limitations of claims 1 or 12 and no *prima facie* case of obviousness has been made out. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 12 over the Gabrielli reference.

The Office Action states that Budreck '497 (Fig. 3) discloses a removable piece with a cup-shaped retainer having a permanent magnet 34 therein which mates with a magnetically-attracted material (Fig. 4, armature 72 having a flat circular bottom 82) contained in another piece 14. Budreck's armature 72 is in the form of a cup with a circular bottom and upstanding cylindrical side walls. Therefore Budreck's armature presents a circular cup, rather than a planar oval face, for mating with the magnetic assembly. Budreck teaches use of ceramic magnets of the mixed ferrite type (col. 3, lines 21-22) rather than the stronger magnets recited in claim 12. Therefore, the Budreck reference does not teach or suggest all the limitations of claims 1 or 12 and no prima facie case of obviousness has been made out. Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 12 over the Budreck reference.

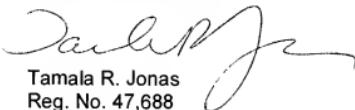
Claims 2-7 depend from and incorporate all the limitations of claim 1. Claims 13-18 depend from and incorporate all the limitations of claim 12. Since the cited references fail to teach or suggest all the limitations of claims 1 and 12, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 2-7 and 13-18.

### CONCLUSION

All claims being in condition for allowance, passage to issuance is respectfully requested.

It is believed that a fee of \$60, for a one month extension of time, is due with this submission. If this is incorrect, please credit any overpayment or charge any deficiency, including any fee for extension of time, to deposit account 07-1969.

Respectfully submitted,



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# Academic Press Dictionary of Science and Technology

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**polar vortex** *Meteorology*, the large-scale cyclonic circulation at the mid- and upper-tropospheric layer centered mainly over the polar regions, characterized by a two-center vortex, one near Baffin Island and the other over northeast Siberia. Also, POLAR CYCLONE, POLAR LOW.

**polar wandering** *Geology*, the movement of the earth's rotation poles and magnetic poles over geologic time. Also, CHANDLER MOTION, POLAR MIGRATION.

**polC gene** *see DNA gene.*

**polder** *Civil Engineering*, 1. the reclamation, encompassing, and draining of lands taken from the sea by means of dikes, as in the Netherlands. 2. an area of land reclaimed in this way.

**pole** *Mechanics*, the point at which the axis of rotation or symmetry of a body passes through its surface. *Astronomy*, 1. either of two such points on the surface of the earth; the North Pole or South Pole. 2. either of two similar points in the heavens about which the stars seem to revolve. *Physics*, one of two points, parts, or regions that have opposing qualities or tendencies, such as the ends of a magnet, the electrodes of an electrolytic cell, or the terminals of a battery. *Biology*, either end of the axis of a nucleus, cell, organ, or complex organism, about which the parts seem to be symmetrically arranged. *Cell Biology*, 1. specifically, either end of the spindle formed in a cell during mitosis. 2. the point in a cell where a process or extension originates. *Electricity*, an output terminal as part of a switch, or two output terminals as part of a double-pole switch. *Optics*, 1. either of the points on the extremities of the lens axis at the position where the axis intersects with the lens surfaces. 2. the geometric center of a convex or concave mirror. *Crystallography*, an orientation direction perpendicular to a face of a crystal.

**pole** *Mathematics*, 1. let  $f(z)$  be a function of a complex variable that is analytic in a simply connected domain  $D$ , except at a point  $z_0$ . If there exists a positive integer  $k$  such that  $(z - z_0)^k f(z)$  is analytic at  $z_0$ , then  $z_0$  is said to be a pole of  $f(z)$ . The smallest such positive integer  $k$  is called the order of the pole. 2. let  $\Gamma$  be a conic in the plane and  $l$  a line intersecting  $\Gamma$  in at most two points, at which points tangents to  $\Gamma$  are drawn. The point  $P$  external to  $\Gamma$  at which the tangents intersect is the pole of  $l$  with respect to  $\Gamma$ , and  $l$  is the polar of  $P$  with respect to  $\Gamma$ . If  $l$  is tangent to the conic, then  $P$  is the point of tangency to  $\Gamma$ . If  $l$  lies outside the conic, then choose any two points  $M$  and  $N$  on  $l$  and find their polars  $m$  and  $n$ . Then the pole  $P$  of  $l$  is the point of intersection of the lines  $m$  and  $n$ . Again,  $l$  is the polar for  $P$ .

**pole blight** *Plant Pathology*, a fatal disease of white pines, characterized by stunting of new growth, yellowing or shortening of needles, and excess resin flow.

**polecat** *Vertebrate Zoology*, 1. a small, carnivorous, dark-brown mammal, *Mustela putorius*, of the weasel family, that ejects a fetid fluid when disturbed; found in Europe. 2. another name for the North American skunk.



polecat

**pole cell** *Invertebrate Zoology*, a cleavage cell of various insect embryos.

**pole changing control** *Electromagnetism*, a method of obtaining two or more running speeds of a three-phase motor by changing the number of magnetic poles.

**pole-dipole array** *Engineering*, an arrangement of electrodes used in a drill logging or surveying process, in which one current electrode is set at infinity while others are guided across the structure to be studied.

**pole dominance** *Particle Physics*, a scattering amplitude property in which, the complex analysis of the energy and scattering angle, the dominating terms of the Laurent series near a pole are those terms with negative powers.

**pole face** *Electromagnetism*, the smooth face of a permanent magnet or a magnetic core that faces an air gap.

**pole face winding** *Electromagnetism*, winding in the pole face of a motor or generator; used to neutralize the cross-magnetizing armature reaction under the pole faces.

**pole figure** *Metallurgy*, a graphic representation of the preferential orientation of a polycrystalline metal or alloy.

**Polemoniaceae** *Botany*, a family of dicotyledonous plants in the order Solanales, characterized by regular flowers with three carpels, gland-tipped hairs, a continuous xylem ring, and no internal phloem.

**Polemoniales** *see SOLANALES*.

**pole piece** *Electromagnetism*, a piece of ferromagnetic material at the end of an electromagnet or permanent magnet, whose shape controls the magnetic flux distribution.

**pole-pole array** *Engineering*, an arrangement of electrodes, used in a logging or lateral search process, in which one current electrode and one potential electrode are moved in proximity across the structure to be studied.

**pole-positioning** *Control Systems*, in linear control theory, a design technique that relies on the proper choice of a linear feedback law to position any or all of a system's closed loop poles.

**polestar** *Astronomy*, see POLARIS.

**polestar recorder** *Engineering*, a device used to determine the degree of cloudiness during night and early morning darkness; it is made up of a camera that keeps the polestar (Polaris) in constant view, recording the clouds that come between it and the star.

**Pole-tek test** *Materials Science*, a commercial testing process for non-destructive evaluation of wood that uses sound velocity to determine the presence of decay by comparison with the velocity of a standard, decay-free pole.

**pole tide** *Oceanography*, a tide caused by the Chandler wobble of the earth, a nutation that has a period of 428 days and a theoretical amplitude of 6 mm.

**pole-zero configuration** *Control Systems*, a method of analyzing a system for stability, natural motion, frequency response, and transient response by plotting the poles and zeros of its transfer function in the complex plane.

**polehole** *Mechanics*, for a rotating rigid body of arbitrary shape subjected to no forces other than its own weight and the reaction of the support at its center of mass, the curve traced by the tip of its angular velocity vector with respect to a frame of reference coinciding with its principal axes of inertia.

**Polehole cone** *see BODY CONE*.

**poli- or polio-** a combining form meaning "gray," especially the gray matter of the brain.

**polian vesicle** *Invertebrate Zoology*, an elongate muscular sac suspended from the ring canal in echinoids and holothurians; used in maintaining pressure in the organism's water vascular system.

**poling** *Electricity*, the deliberate adjustment of an electromagnetic field polarity, especially in wire-line applications in which transpositions are used between sections of wire or lengths of cable to allow the opposition of residual cross-talk couplings in individual sections or lengths.

*Metallurgy*, a reducing step in the refining of copper, formerly effected by immersing a green pole into the molten crude copper; currently effected by using a reducing gas such as propane.

**polio** *Medicine*, a shorter name for the disease poliomyelitis. See POLIOMYELITIS.

**polioencephalitis** *Neurology*, inflammation of the gray matter of the brain and brain stem.

**polioencephalomyelitis** *Medicine*, an inflammatory disease of the gray matter of the brain and spinal cord.

**poliomyelitis** [pō'liō mēl'ētēs, pō'liō mēl'ētēs] *Medicine*, an acute viral disease, occurring sporadically and in epidemics, characterized in the minor illness by fever, sore throat, headache, stiff neck, and back, and vomiting. The major illness is characterized by involvement of the central nervous system, with possible paralysis and atrophy of muscles or muscle groups resulting in permanent deformity. The disease is now largely controlled by vaccines. Also, POLIO, INFANTILE PARALYSIS.